American University of Beirut
Faculty of Arts & Sciences
Department of Biology
Syllabus
Fall 2009-2010

Course number: Biology 247
Course title: Animal Physiolgoy

Instructor:
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Textbook: Animal Physiology, Mechanisms and Adaptations by David Randall, Warren Burggren & Kahleen French, 5th edition.

Course description:
The course is a study of the fundamental principles and mechanisms that govern body functions in animals, with an emphasis on the molecular aspects.

Student learning outcomes:
By the end of this course the student should be able to :

1- Understand the basic principles that govern body functions
2- Relate function to structure from the molecular to the organismal level
3- Understand the concepts of homeostasis
4- Predict animal responses to changes in the internal and external environment
5- Compare the different modes by which organisms have adapted to survive similar environmental challenges
6- Interpret experimental results based on acquired knowledge
7- Apply basic principles to new situations

Course policy:
Attendance: Students are expected to attend classes regularly. In case a meeting is missed , it is the responsibility of the student to cover , on his own, the material discussed in class during his absence.

Missed exams: No make-up will be given for a missed exam unless a valid reason is presented. In case of illness only medical reports issued by the infirmary are accepted.

Class discussions: students are expected to participate in class discussions throughout the term. The extent of their participation will have its impact on the final grade.

N.B. Students are expected to be familiar and adhere to the student code of conduct (http://pnp.aub.edu.lb/general/conductcode/index.html). Cheating will be seriously penalized

Means of evaluation:

Quiz I: 30%	Mon. Nov 2nd , 5:30 pm
Quiz II: 30%	Mon. Dec 7th , 5:30p.m
Final : 30%	
Topic presentation : 10%	

Course outline:

Topic	Chapter
Membranes, channels and Transport	4
Types of transport processes	
Osmotic properties of cells	
The Physical Basis of Neuronal Functions	5
Passive electrical properties of membranes	
Electrochemical gradients	
Resting and action potentials	
Communication along and between neurons	6
Signal propagation within and between neurons	
Chemical nature of neurotransmitters	
Postsynaptic mechanisms	
Synaptic plasticity	
Sensing the environment	7
General properties of sensory perception	
Chemoreceptors	
Mechanoreceptors	
Thermoreceptors	
photoreceptors	
Glands and hormones	9
Cellular secretions	
Secretory mechanisms	
Endocrine & exocrine secretions	
Hormones and intracellular signaling	
Muscles and animal movements	10
Skeletal muscle structure and fiber types	
Mechanics of muscle contraction	
Regulation of muscle contraction	
Energetics of muscle contraction	
Cardiac muscle	
Skeletal muscle	
Circulation	12
Electrical and mechanical properties of the heart	
Hemodynamics	
Peripheral circulation	